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EXAMINER	
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ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/801,503	ALBASINI ET AL.	
	Examiner	Art Unit	
	KHANH C. TRAN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 25-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-9* is/are allowed.

6)☒ Claim(s) *25,26 and 29-35* is/are rejected.

7)☒ Claim(s) *27 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 May 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Amendment filed on 12/11/2008 has been entered. Claims 1-10 and 25-35 are still pending in this Office action.

Response to Arguments

2. Applicant's arguments with respect to claims 10 and new claims 25-35 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim(s) **10** is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim recites a method of synthesizing an output signal multiplying a frequency of a reference signal by a fractional conversion factor as set forth in the application claim, the claim neither transforms underlying subject matter nor positively ties to another statutory category that accomplishes the claimed method steps, and therefore, does not qualify as a statutory process.

The claimed method fails to positively recite a statutory apparatus in order to accomplish these steps. The steps in the instant claim is sufficiently broad that those steps can be performed manually without the use of any particular machine. The claim could conceivably be interpreted to mean that a person determines a feedback signal based on the frequency of the output signal and a dividing ratio, determines a control signal based on a reference signal and the feedback signal, use the control signal to adjust the frequency of the output signal, compensates a phase error by calculating incremental phase error to determine a correction value to be applied to the control signal.

4. Claim(s) **31** is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim recites a method for controlling the output of a phase locked-loop as set forth in the application claim, the claim neither transforms underlying subject matter nor positively ties to another statutory category that accomplishes the claimed method steps, and therefore, does not qualify as a statutory process.

The claimed method fails to positively recite a statutory apparatus in order to accomplish these steps. The steps in the instant claim is sufficiently broad that those steps can be performed manually without the use of any particular machine. The claim

could conceivably be interpreted to mean that a person determines a phase difference between a reference signal and a feedback signal, modifies the phase-error signal with a conditioning signal determined from a modulation value and the feedback signal and controls the output signal from the adjusted phase-error signal.

5. Claims 32-34 are also rejected because of dependency on rejected claim 31, respectively.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 10, 25-26 and 29-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi et al. U.S. Patent 6,317,476 B1 (previously cited) in view of Keaveney et al. U.S. Patent Application Publication No. US 2002/0180539 A1.

Regarding claim 10, Oishi et al. discloses in FIG. 4 a fractional-N-frequency synthesizer (column 9 lines 20-45). The fractional-N-frequency synthesizer includes an accumulator 16 having an n-bit configuration with an overflow output (column 9 lines 48-53).

Oishi et al. teachings differ from the pending claim in that Oishi et al. does not disclose means for generating a modulation value being a sigma-delta modulator as claimed in the application claim.

Keaveney et al. discusses a prior art fractional-N synthesizer (paragraph [0003]) including an interpolator (paragraph [0005]) that can be implemented as a single accumulator with the overflow bit as output or could be a high order sigma-delta modulator.

Since Oishi et al. also teaches an accumulator 16 having an n-bit configuration with an overflow output and Keaveney et al. prior art fractional-N synthesizer could employ a single accumulator with the overflow bit or a high order sigma-delta modulator in place of an interpolator, one of ordinary skill in the art at the time the inventionwas made would have recognized the interchangeability of Oishi et al. also accumulator 16 for the high order sigma-delta modulator as discussed in Keaveney et al. invention.

Referring back to Oishi et al. invention, see also FIG. 4, VCO 14 generates a frequency f_0 that is divided by N or N+1 (column 9 lines 26-35). The accumulator 16 outputs an overflow signal Sov to the frequency divider 15. The frequency divider 15 changes the ratio of frequency division from N to N+1 during a phase-comparison cycle at which the overflow is detected (column 9 lines 50-55). The spurious signal suppressing circuit 17 is designed to add an electrical current proportional to the accumulated value acm of the accumulator 16 to the charge-pump-output current Icp of the charge-pump circuit 12 (column 10 lines 2-10) to generate D_0 that corresponds to the control signal claimed. VCO 14 generates a signal having a frequency f_0 (column 9

lines 26-35). As recited above, the spurious signal suppressing circuit 17 is designed to add an electrical current proportional to the accumulated value acm of the accumulator 16 to the charge-pump-output current Icp. In view of that, the spurious signal suppressing circuit 17 compensates for the phase error caused by Sov and frequency divider 15. Changes in the output current Iss that corresponds to the condition signal when the accumulated value acm of the accumulator 16 is changed from 1, 2, 3, and so on. The output current Iss increases from Iad, 2 X Iad, 3 X Iad, and so on (column 10 lines 20-26). In view of that, the changes in the output current Iss reflects the increment values in the spurious signal suppressing circuit 17 as shown in FIG. 6. The D/A converter 18 generates a current (that corresponds to the correction value claimed) that is proportional to the accumulated value acm of the accumulator 16 (column 10 lines 29-35).

Regarding claim 25, claim is rejected on the same ground as for claim 10 because of similar scope. Furthermore, referring back to Oishi et al. FIG. 4, phase comparator 11 corresponds to phase-frequency detector claimed, the spurious signal suppressing circuit 17 and accumulator 16 that correspond to the control circuit generates output current Iss that corresponds to conditioning signal claimed; VCO 14 corresponds to generator claimed; and D_0 corresponds to the control signal claimed.

Regarding claim 26, Oishi et al. spurious signal suppressing circuit 17 (FIG. 6) that corresponds to the control logic block is coupled to accumulator 16 (shown in FIG.

2) that corresponds to the sigma-delta modulator claimed. The spurious signal suppressing circuit 17 comprises a duration-adjustment unit 21 adjust a timing and a duration of the adding operation (column 10 lines 60-65). In view of that, the timing that corresponds to the correction value claimed is based on the ACM and comparison-operation cycle signal (FIG.6) and the spurious signal suppressing circuit 17 is clocked by f'_p, which is in proportion to the output frequency f_0 of VCO 14 (column 10 lines 50-55). FIG. 6 further discloses D/A converter 18 (column 10 lines 29-35) generating a current Iss that corresponds to the conditioning signal claimed.

Regarding claim 29, Oishi et al. FIG. 4 further discloses a low pass filter 13 that corresponds to the filter claimed.

Regarding claim 30, Oishi et al. FIG. 4 further discloses a frequency divider 15 that corresponds to the multi-modulus frequency divider claimed.

Regarding claim 31, claim is rejected on the same ground as for claim 10 because of similar scope.

Regarding claim 32, referring to Oishi et al. FIG. 6, the pulse generation circuit 20 generates pulses (that corresponds to the first data set) based on the comparison-operation cycle signal that corresponds to the adjusting value claimed. Output from switch 21 (FIG. 6) corresponds to the second data set claimed based on generated

pulses and accumulated value acm that corresponds to the modulation value. The spurious signal suppressing circuit 17 generates current Iss (FIG. 4) that corresponds to the conditioning signal claimed.

Regarding claim 33, f'_p that corresponds to the feedback signal claimed is generated based on f_0 and accumulated value acm, see FIG. 4.

Regarding claim 34, Oishi et al. FIG. 4 further discloses a LP 13 filtering D_0 that corresponds to the modified phase-error signal claimed.

Regarding claim 35, claim is rejected on the same ground as for claim 25 because of similar scope.

Allowable Subject Matter

7. Claims 1-9 are allowed.

8. Claims 27-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Oishi et al. U.S. Patent 5,818,303.

Kawahara U.S. Patent 6,829,318 B2.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH C. TRAN whose telephone number is (571)272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

/KHANH C. TRAN/
Primary Examiner, Art Unit 2611